

## Claims

1. Position detector for detecting translational and/or rotational movements with at least one single exciter magnet (EM), only one ferromagnetic element (FE), at least one induction coil (SP or SP1), and at least one additional sensor element (SE) for determining information concerning the polarity and the position of the exciter magnet (EM), where all of the information needed to determine the direction of movement of the exciter magnet (EM) is available at the time ( $T_s$ ) that the one ferromagnetic element (FE) is triggered.

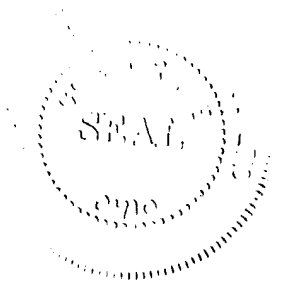
2. Position detector according to Claim 1, characterized in that the ferromagnetic element (FE) is a pulse wire.

3. Position detector according to Claims 1 and 2, characterized in that the induction coil (SP or SP1) is used to measure the remagnetization direction and, in conjunction with the additional sensor element (SE), to determine the direction in which the remagnetization of the ferromagnetic element (FE) is triggered.

4. Position detector according to Claims 1-3, characterized in that the additional sensor element (SE) is a second induction coil (SP2) over the ferromagnetic element (FE) and is used to determine the direction in which the remagnetization of the ferromagnetic element (FE) is triggered.

5. Position detector according to Claims 1-3, characterized in that the additional sensor element (SE) is a Hall sensor (HS) for measuring the polarity or determining the position of the exciter magnet (EM).

6. Position detector according to Claims 1-5, characterized in that the complete set of information available at the time ( $T_s$ ) for determining the polarity and direction of movement of the exciter magnet (EM) consists of the data



in the nonvolatile memory and the signals at the output terminals (22, 23) of the induction coils (SP1, SP2) or the signals at the output terminals (22) of the induction coil (SP) and at the output terminals (24) of the Hall sensor (HS).

7. Position detector according to Claims 1-6, characterized in that the axis of the ferromagnetic element (FE) is parallel to the direction of movement of the exciter magnet (EM).

8. Position detector according to Claims 1-6, characterized in that the axis of the ferromagnetic element (FE) is perpendicular to the direction of movement of the exciter magnet (EM).

9. Position detector according to Claims 1-8, characterized in that at least one ferromagnetic flux-conducting piece (FL1 and/or FL2) for guiding and/or bundling the flux is assigned to the ferromagnetic element (FE).

10. Position detector according to Claims 1-9, characterized in that the energy supply for the evaluation circuit (30) can be taken from the signals sent by the induction coils (SP, SP1, SP2) used to detect position and/or polarity.

11. Position detector according to Claims 1-10, characterized in that the evaluation circuit (30) comprises at least one counter (38), a nonvolatile memory unit (36), and a capacitor (C).

12. Position detector according to Claims 1-11, characterized in that the nonvolatile memory unit (36) is a FRAM and/or an EEPROM unit.

13. Position detector according to one or more of the preceding claims, characterized in that one of the coils (SP / SP1) can be supplied with an external current pulse, which serves either to initiate the biasing of the ferromagnetic element (FE) or to continue that biasing.

